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 NEWS  1           Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2           "Ask CAS" for self-help around the clock
 NEWS  3  DEC 18   CA/CAplus pre-1967 chemical substance index entries enhanced
                   with preparation role
 NEWS  4  DEC 18   CA/CAplus patent kind codes updated
 NEWS  5  DEC 18   MARPAT to CA/CAplus accession number crossover limit increased
                   to 50,000
 NEWS  6  DEC 18   MEDLINE updated in preparation for 2007 reload
 NEWS  7  DEC 27   CA/CAplus enhanced with more pre-1907 records
 NEWS  8  JAN 08   CHEMLIST enhanced with New Zealand Inventory of Chemicals
 NEWS  9  JAN 16   CA/CAplus Company Name Thesaurus enhanced and reloaded
 NEWS 10  JAN 16   IPC version 2007.01 thesaurus available on STN
 NEWS 11  JAN 16   WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
 NEWS 12  JAN 22   CA/CAplus updated with revised CAS roles
 NEWS 13  JAN 22   CA/CAplus enhanced with patent applications from India
 NEWS 14  JAN 29   PHAR reloaded with new search and display fields
 NEWS 15  JAN 29   CAS Registry Number crossover limit increased to 300,000 in
                   multiple databases
 NEWS 16  FEB 15   PATDPASPC enhanced with Drug Approval numbers
 NEWS 17  FEB 15   RUSSIAPAT enhanced with pre-1994 records
 NEWS 18  FEB 23   KOREAPAT enhanced with IPC 8 features and functionality
 NEWS 19  FEB 26   MEDLINE reloaded with enhancements
 NEWS 20  FEB 26   EMBASE enhanced with Clinical Trial Number field
 NEWS 21  FEB 26   TOXCENTER enhanced with reloaded MEDLINE
 NEWS 22  FEB 26   IFICDB/IFIPAT/IFIUDB reloaded with enhancements
 NEWS 23  FEB 26   CAS Registry Number crossover limit increased from 10,000
                   to 300,000 in multiple databases
 NEWS 24  MAR 15   WPIDS/WPIX enhanced with new FRAGHITSTR display format
 NEWS 25  MAR 16   CASREACT coverage extended
 NEWS 26  MAR 20   MARPAT now updated daily
 NEWS 27  MAR 22   LWPI reloaded
 NEWS 28  MAR 30   RDISCLOSURE reloaded with enhancements
 NEWS 29  MAR 30   INPADOCDB will replace INPADOC on STN
 NEWS 30  APR 02   JICST-EPLUS removed from database clusters and STN

 NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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=> s rapeseed and extraction and enzyme
4739 RAPESEED
31232 EXTRACTION
35041 ENZYME
L1 26 RAPESEED AND EXTRACTION AND ENZYME

=> d l1 all 1-26

L1 ANSWER 1 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 2007:B0392 FSTA
TI Downstream process engineering evaluation of transgenic soybean seeds as host for recombinant protein production.
AU Robic, G.; Farinas, C. S.; Rech, E. L.; Bueno, S. M. A.; Miranda, E. A.
CS Correspondence address, E. A. Miranda, Dep. de Processos Biotec., Fac. de Eng. Quimica, Univ., Estadual de Campinas, CP 6066, CEP 13083-970 Campinas, SP, Brazil. Tel. +55 19 3521 39 18. Fax +55 19 3521 3890. E-mail everson(a)feq.unicamp.br
SO Biochemical Engineering Journal, (2006), 32 (1) 7-12
ISSN: 1369-703X
DT Journal
LA English
AB Soybeans have good potential as hosts for recombinant protein production; however, studies into downstream processing of proteins from recombinant soybeans are limited. In this study, extraction and purification of a recombinant β-glucuronidase expressed in soybeans is reported. Recovery of the enzyme involved extraction in 0.05M citrate buffer (pH 5.25) followed by sequential anion exchange chromatography and hydrophobic interaction chromatography. Using this chromatographic separation procedure, a purification factor of 97.3 and recovery of 110% of β-glucuronidase activity extracted (100% = 8.9 x 10.sup.4 U/ml extract) were achieved. Purification of the enzyme from transgenic soybeans was compared with that from transgenic rapeseed or corn. The >100% activity recovered is attributed to the removal during purification of a β-glucuronidase inhibitor. Results demonstrate the successful separation of the recombinant enzyme, which has an acidic pI, from native soy proteins.

CC B (Biotechnology)
CT CHROMATOGRAPHY; DOWNSTREAM PROCESSING; ENZYMES; EXTRACTION; GENETICS; GLYCOSIDASES; NOVEL FOODS; PLANTS; SOYBEANS; Nb -GLUCURONIDASES; RECOMBINANT ENZYMES; TRANSGENIC PLANTS

L1 ANSWER 2 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 2002:G0620 FSTA
TI Study on hydrolyzing and modifying brown rapeseed isolated protein by enzyme and acetic anhydride.
AU Zhou Xiaohua
CS Chem. Ind. Coll., Chongqing Univ., Chongqing 400044, Sichuan, China
SO Food Science, China, (2002), 23 (3) 33-38, 19 ref.
ISSN: 1002-6630
DT Journal
LA Chinese
SL English
AB Conditions for sequential hydrolysis of rapeseed protein isolate by 2709 alkaline proteinase and papain were studied. Modification of peptides by H.sub.2O.sub.2 and acetic anhydride was performed. Extraction rate of rapeseed protein isolate reached 73.6% under conditions of 1% NaOH and 60°C for 5 h. Rapeseed protein isolate was deep brown in colour and contents of protein, glucoraphenin and phytic acid were 91.5, 0.024 and 0.32%, respectively. Isolated protein was sequentially hydrolysed by 2709 alkaline proteinase at E/S (U/g) 5 x 10.sup.3, 50 ± 1°C, pH 10.0 for 60 min, and with papain at E/S (U/g) 5 x 10.sup.3, 55 ± 1°C, pH 7.5 for 60 min. Hydrolysis degree of 2709 alkaline proteinase was 59.3% while that of papain was 40.7% and the isoelectric point remained at pH 3.5. A light yellow protein with yield of 94.83% was obtained through treatment at 80°C and ratio of H.sub.2O.sub.2 to protein of 1.25-1.5 (v/w). Acetylation with 30% acetic anhydride (v/w) at 20°C and pH 9.0-9.5 gave an acetylated rapeseed protein isolate with isoelectric point pH 4.0 and protein concentration 18.74 mg/ml without a strange aroma.
CC G (Catering, Speciality and Multicomponent Foods)
CT PHYSICAL PROPERTIES; PROTEINASES; PROTEINS; RAPESEEDS; HYDROLYSIS; MODIFICATION; PAPAIN; PHYSICOCHEMICAL PROPERTIES; PROTEIN ISOLATES

L1 ANSWER 3 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 2002:B0570 FSTA
TI Host selection as a downstream strategy: polyelectrolyte precipitation of β-glucuronidase from plant extracts.
AU Menkhaus, T. J.; Eriksson, S. U.; Whitson, P. B.; Glatz, C. E.
CS Correspondence (Reprint) address, C. E. Glatz, Dep. of Chem. Eng., Iowa State Univ., Ames, IA 50011-2230, USA. Tel. 515-294-8472. Fax 515-294-2689. E-mail cglatz(a)iastate.edu
SO Biotechnology and Bioengineering, (2002), 77 (2) 148-154, 36 ref.
ISSN: 0006-3592
DT Journal
LA English
AB One drawback that has hindered the use of plants for production of recombinant proteins is the lack of information regarding downstream processing. In this study, a polycationic precipitant (polyethylenimine; PEI) was used to precipitate wild-type and recombinant β-glucuronidase (GUS) from aqueous extracts of rapeseeds, soybeans and corn, and results were compared with those obtained for extraction of the enzyme from a crude bacterial fermentation broth. Results showed that rapeseed was the most compatible expression host; GUS could be precipitated completely with the lowest dose of PEI (30 mg/g total protein) and >80% of initial wild-type GUS activity was recovered, with an 18-fold purification. Although the precipitation yield of wild-type GUS from soybeans was >90%, enrichment was only 1.3-fold; corresponding values for corn were 81% and 2.6-fold. Recovery, and hence yield and enrichment ratio, of recombinant GUS were reduced compared with those of the wild-type enzyme due to the

increased charge of the former. Compared with purification from crude bacterial fermentation broth, polymer dose requirements for the plant systems were lower, while yields of recoverable activity and purification factors were higher.
CC B (Biotechnology)
CT CORN; DOWNSTREAM PROCESSING; ENZYMES; EXTRACTS; GLYCOSIDASES; PRECIPITATION; PURIFICATION; RAPESEEDS; SOYBEANS; Nb -GLUCURONIDASES; RECOMBINANT ENZYMES

L1 ANSWER 4 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 2001(11):N0877 FSTA
TI Microwave heating and γ-irradiation treatment of rapeseed (Brassica napus).
AU Valentova, O.; Novotna, Z.; Svoboda, Z.; Schwarz, W.; Kas, J.
CS Dep. of Biochem. & Microbiol., Fac. of Food & Biochem. Tech., Inst. of Chem. Tech. Prague, Technicka 5, CZ-166 28 Prague 6, Czech Republic. Fax +420 2 3113726. E-mail zuzana.novotna(a)vscht.cz
SO Journal of Food Lipids, (2000), 7 (4) 237-245, 9 ref.
ISSN: 1065-7258
DT Journal
LA English
AB Effects on rapeseeds of treatment with γ-irradiation and microwave heating prior to oil extraction were examined. Seeds were irradiated with 0.5 or 2.0 kGy of γ-irradiation using a .sup.6.sup.0Co source. Whole seeds or flakes were heated in a microwave oven (850 W) for 1-7 min. Extracts were then analysed for phospholipase and peroxidase activities, protein and lipid composition, and moisture content. Improvement of oil extractability was achieved after microwave treatment, while quality parameters of the crude oil extracted were not significantly affected, with the exception of total P content, which was nearly 4x higher than that in control oil. It is suggested that microwave treatment damages cell membranes in the rapeseeds, releasing higher amounts of phospholipids into the crude oil. Microwave heating also resulted in a reduction of enzyme activities and lower protein contents in buffered seed extracts due to partial protein denaturation. Differences in protein profiles between treated and untreated seeds were also demonstrated by SDS-PAGE. Denaturation was observed for all types of proteins. γ-Irradiation had practically no effect on oil quality parameters and did not change its yield.
CC N (Fats, Oils and Margarine)
CT HEATING; IRRADIATION; MICROWAVES; PHYSICAL PROPERTIES; RAPESEED OILS; RAPESEEDS; GAMMA IRRADIATION; PHYSICOCHEMICAL PROPERTIES; QUALITY

L1 ANSWER 5 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1999(10):N0563 FSTA
TI Enzymatic decrease in the phenolic content of canola meal using concentrated aqueous or aqueous/hexane slurries.
AU Lacki, K.; Duvnjak, Z.
CS Correspondence (Reprint) address, Z. Duvnjak, Dep. of Chem. Eng., Univ. of Ottawa, Ottawa, Ont. K1N 6N5, Canada
SO Acta Biotechnologica, (1998), 18 (2) 95-106, 29 ref.
ISSN: 0138-4988
DT Journal
LA English
AB An enzymic process to decrease the phenolic content of canola [rapeseed] meal was investigated. The method was based on addition of an enzyme preparation from white-rot fungus (Trametes versicolor) to concentration meal-buffer slurries. This approach eliminated extraction of valuable meal components such as proteins and carbohydrates. 2 systems were considered: slurries with canola meal concentration >33% (w/v); and slurries with canola meal concentration ≤12.5% (w/v) with n-hexane as the main component of the continuous phase. Concentration of sinapic acid esters decreased by 99% after 1.5, 2 and 3 h long

treatments of meal with an initial moisture content of 75% at 90, 70 and 50°C, respectively. The process was carried out at temperature of ≤110°C. Both enzyme and moisture concentration influenced the enzymic process by a coupled action; concentration of O.sub.2 strongly affected the process. The enzymic process was carried out in the presence of hexane as the main component of the continuous phase. Optimum temperature for such a process was 30-40°C. At 30°C, after 1 h of treatment, meal phenolic content was decreased by 97%. Water uptake by the meal was diminished in the presence of hexane.
CC N (Fats, Oils and Margarine)
CT ENZYMES; FLOURS; HYDROCARBONS; PHENOLS; RAPESEEDS; SOLVENTS; ENZYMIC ACTIVITY; HEXANE; RAPESEED MEAL

L1 ANSWER 6 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1998(09):N0403 FSTA
TI Optimization of enzyme pre-treatment of rapeseed for enhanced oil recovery.
AU Sarker, B. C.; Singh, B. P. N.; Agrawal, Y. C.; Gupta, D. K.
CS Dep. of Process and Food Eng., G.B. Pant Univ. of Agric. & Tech., Pantnagar 263 145, India
SO Journal of Food Science and Technology, India, (1998), 35 (2) 183-186, 13 ref.
ISSN: 0022-1155
DT Journal
LA English
AB Response surface methodology was used to evaluate the effect of rapeseed moisture content, enzyme (protein) concentration and incubation period and temperature on oil recovery. A central composite rotatable design experimental approach was followed. Results revealed that oil recovery from enzyme pre-treated samples could be increased by as much as 6% compared to the controls (untreated samples). Based on the response surface model, the following optimum prameters were obtained: moisture content of seed, 23.33% (wet basis); protein content, 53.23 mg/100 g moisture-free sample; incubation period, 13.11 h; and incubation temperature, 46.16°C. Computer-generated response surfaces and canonical analyses showed that the stationary point represented a point of maximum response. [From En summ.]
CC N (Fats, Oils and Margarine)
CT ENZYMES; EXTRACTION; RAPESEED OILS

L1 ANSWER 7 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1998(06):G0170 FSTA
TI Isolation, characterization and enzyme hydrolysis of canola meal protein.
AU Klockeman, D. M.
CS Univ. of Georgia, Athens, GA, USA
SO Dissertation Abstracts International, B, (1997, thesis publ. 1996), 58 (2) 468 Order No. DA9722481, 66pp.
ISSN: 0419-4217
DT Dissertation
LA English
AB A study was conducted to improve protein extraction from defatted canola (rapeseed) meal and protein recovery from the extract to produce a canola meal protein isolate (CMPI) with good nutritional quality and functional properties for food ingredient applications. The method consisted of extracting 5% (w/v) defatted meal with 0.4% (w/v) NaOH in baffled flasks shaken at 180-200 rpm for 60 min at room temperature More than 99% protein extractability and 87.4% recovery were obtained with the extraction method developed. Partial enzyme hydrolysis using commercial enzyme preparations was utilized to attempt to increase CMPI solubility; the partial hydrolysis treatment applied was found to increase solubility. Results indicated the successful development of a CMPI isolation method with increased recovery, maintenance of protein quality and limitation of phytates, glucosinolates and hull fibre content in the isolate. It is

concluded that the functional properties of hydrolysed CMPI make it usable as both a functional and nutritional food ingredient.
CC G (Catering, Speciality and Multicomponent Foods)
CT ENZYMES; EXTRACTION; FLOURS; PROTEINS VEGETABLE; RAPESEEDS; SOLUBILITY; HYDROLYSIS; RAPESEED MEAL; VEGETABLE PROTEINS

L1 ANSWER 8 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1998(04):N0127 FSTA
TI Moisture and heat treatment for desactivating seed specific enzymes.
AU Beyer, W.
CS Lurgi Oel-Gas-Chemie GmbH, Lurgiallee 5, D-60295 Frankfurt, Germany
SO Fett/Lipid, (1997), 99 (2) 46-51, 2 ref.
ISSN: 0931-5985
DT Journal
LA German
SL English
AB Equipment for inactivation of enzymes in flaked rapeseed, supplied to a vegetable oil factory in Cengdu, Sichuan, China by Lurgi Oel-Gas-Chemie GmbH, Frankfurt, Germany, is described. The aim of the process is to inactivate enzymes responsible for formation of non-hydratable phosphatides in crude rapeseed oil during preliminary pressing and solvent extraction; these non-hydratable phosphatides may cause problems in subsequent refining. The enzyme inactivation is achieved in a 3-stage process: rapid heating of the rapeseed flakes (initial moisture content 7-8%) to 100°C with dry steam; holding at 100°C for 20-30 min; and drying to 1-2% below the initial value. This process reduced phosphatide content in the crude rapeseed oil considerably; after desliming, these crude rapeseed oils were suitable for direct physical refining. Economics of this process are discussed.
CC N (Fats, Oils and Margarine)
CT ENZYMES; HEATING; PHOSPHOLIPIDS; RAPESEED OILS; PHOSPHATIDES

L1 ANSWER 9 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1997(07):N0018 FSTA
TI Use of supercritical carbon dioxide for edible oil processing.
AU Dunford, N. T.
CS Univ. of Alberta, Edmonton, Alta. T6G 2P5, Canada
SO Dissertation Abstracts International, B, (1996, thesis publ. 1995), 57 (3) 1522 Order No. DANN06205, 193pp.
ISSN: 0419-4217
DT Dissertation
LA English
AB Effects were studied of processing parameters (temperature, pressure, cosolvent addition (ethanol) and moisture content of the feed material) on lipid extract composition, residual proteins and enzyme activity during supercritical CO.sub.2 (SC-CO.sub.2) extraction of oil from canola (rapeseed) and Atlantic mackerel (Scomber scombrus), representing low and high moisture products, respectively. Results contributed to the current limited understanding of the complex interactions between SC-CO.sub.2/water/oil/cosolvent/solid matrix components during high pressure extraction. [From En summ.]
CC N (Fats, Oils and Margarine)
CT CARBON DIOXIDE; EXTRACTION; MACKEREL; OILS; OILS FISH; PROCESSING; RAPESEED OILS; SEA FOODS; VEGETABLE PRODUCTS; FISH OILS; SUPERCRITICAL CO2 EXTRACTION

L1 ANSWER 10 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1996(09):N0057 FSTA
TI Flash chromatography and other methods in industrial enzyme -based rapeseed processing: production of new high-quality products.
AU Ingvardsen, L.
CS Kongelige Vet.- og Landbohojskole, Copenhagen, Denmark
SO Dissertation Abstracts International, C, (1996, thesis publ. 1995), 57 (1)

110 196pp.
ISSN: 0307-6075
DT Dissertation
LA English
AB Rapeseed processing by a method based on aqueous enzymic extraction of oil, resulting in a detoxified proteinaceous meal and other by-products, was developed in the 1980s. Products generated by this process were examined by high performance capillary electrophoresis and the process was optimized; removal of glucosinolates from the syrup fraction by flash chromatography was also evaluated. Trials indicated that true protein digestibility was improved by prolonging enzyme treatment and use of a sieving procedure. [From En summ.]
CC N (Fats, Oils and Margarine)
CT PROCESSING; RAPESEEDS; SEEDS

L1 ANSWER 11 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1996(02):G0027 FSTA
TI [Effects of enzyme modification of rapeseed proteins on their functional properties.]
AU Wroniak, M.; Gwiazda, S.; Dluzewska, E.
CS Katedra Tech. Zboz, Nasion Oleistych i Koncentratow Spozywczych SGGW, Warsaw, Poland
SO Przeglad Zbozowo-Mlynarski, (1994), 38 (8) 22-24, 8 ref.
ISSN: 0033-2461
DT Journal
LA Polish
AB A rapeseed protein preparation obtained by extraction of enzyme hydrolysed rapeseed grist had better emulsification and foaming properties than that obtained by direct extraction with NaOH. Enzymes used in hydrolysis were alkalase (activity 2.5 Anson units/g preparation) and neutrase (activity 0.55 Anson unit/g); each was used at 0.19-0.58 Anson units/100 g grist. Enzyme hydrolysis was at pH 8.0 for alkalase and 7.0 for neutrase, for 1 h at 50°C. Extraction was performed using H.sub.2O-5M NaOH (10:1) at pH 9 and 20°C for 10 h. Best emulsification properties were for proteins obtained using 0.19 Anson units alkalase/100 g; best foaming properties were for proteins obtained using 0.29 or 0.375 Anson units alkalase/100 g or 0.19 Anson units neutrase/100 g grist.
CC G (Catering, Speciality and Multicomponent Foods)
CT ENZYMES; FUNCTIONAL PROPERTIES; PHYSICAL PROPERTIES; PROTEINS; PROTEINS VEGETABLE; RAPESEEDS; SEEDS; HYDROLYSIS

L1 ANSWER 12 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1994(01):N0030 FSTA
TI Enzyme-aided vs. two-stage processing of canola: technology, product quality and cost evaluation.
AU Sosulski, K.; Sosulski, F. W.
CS Saskatchewan Res. Council, 15 Innovation Blvd., Saskatoon, Sask. S7N 2X8, Canada
SO Journal of the American Oil Chemists' Society, (1993), 70 (9) 825-829, 28 ref.
ISSN: 0003-021X
DT Journal
LA English
AB Use of carbohydrases to enhance oil extraction during pressing [of rapeseed] in a laboratory expeller was investigated. [Enzymes used were 2 commercial preparations SP-249 and Olease. Enzymes (0.1 and 0.01%, respectively) were added to autoclaved rapeseeds. Seeds were hydrolysed at 30% moisture and 50°C for 6 h, prior to drying to 6% moisture.] Enzyme-treated seeds at 6% moisture were pressed in the expeller set at full-press conditions. Control seeds were pressed at wider choke openings but at the same barrel pressures as enzyme-treated samples. Time of pressing and temperature and pressure inside the expeller barrel were used to calculate throughput and energy

requirements/unit weight of processed material. Treatment with enzymes improved throughput of the expeller, increased oil flow rate and oil recovery. Material throughput was increased by 30-50%, depending on canola var. Recovery of the oil was increased from 72% of the seed oil for control samples, to 90-93% for enzyme-treated samples. The average residual oil content in presscakes from enzyme-treated seeds was 7.4%. Oil quality was inferior to cold-pressed control but was much better than has been reported for solvent-extracted oil.
CC N (Fats, Oils and Margarine)
CT ENZYMES; EXTRACTION; GLYCOSIDASES; OILS; PROCESSING; RAPESEED OILS; RAPESEEDS; SEEDS; VEGETABLE PRODUCTS; CARBOHYDRASES

L1 ANSWER 13 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1992(11):N0028 FSTA
TI Extraction by aqueous enzymatic processes.
AU Christensen, F. M.
CS Novo Nordisk Ferment Ltd., Neumatt, Switzerland
SO INFORM, (1991), 2 (11) 984, 986-987
ISSN: 0897-8026
DT Journal
LA English
AB Research on the use of industrial enzyme preparations to recover vegetable oils by aqueous extraction processes is discussed. Use of the expeller press to extract vegetable oils is compared with enzymic processes. The latter alternative uses an oil-containing material with a cell-wall-degrading-enzyme preparation to liberate oil in the plant cell under very mild processing conditions. Components of the cell (protein, oil, polysaccharides) are transferred to the aqueous phase which facilitates pure separation by centrifuge processes. Application of the enzymic process to extraction of rapeseed oil, coconut oil, corn germ, flaxseed and olive oil is described.
CC N (Fats, Oils and Margarine)
CT ENZYMES; EXTRACTION; OILS VEGETABLE; VEGETABLE PRODUCTS; VEGETABLE OILS

L1 ANSWER 14 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1992(06):N0006 FSTA
TI The aqueous extraction of glucosinolates from rapeseed .
AU Dietz, H. M.; King, R. D.; Harris, R. V.
CS Correspondence (Reprint) address, R. D. King, Dep. of Food Sci. & Tech., Univ. of Reading, Food Studies Building, Whiteknights, Reading RG6 2AP, UK
SO International Journal of Food Science & Technology, (1991), 26 (1) 53-63, 32 ref.
DT Journal
LA English
AB Losses of seed constituents from Brassica campestris var. Toria for various conditions of the leaching process developed at the Overseas Development Natural Resources Institute (ODNRI) Chatham, UK, were studied. Boiling seeds for 3 min at a seed/water ratio of 1:3 was sufficient to allow inactivation of the enzyme myrosinase; higher ratios did not increase losses in any of the constituents studied. Heat treatment of seeds (5 min in boiling water) reduced N solubility at the native pH (6.5), from 28 to 8%. The pH had little effect on extent of glucosinolate leaching from coarsely ground seeds and the min. protein loss occurred close to the native pH. Increased water temperature (40, 50 and 80°C) did not lead to an increased leaching efficiency over ambient temperature (20°C). Seed/water ratio was found to be the most important factor during leaching. Cross-current extraction over 3 stages at a seed/water ratio of 1:10 reduced glucosinolate content by 98% while the crude protein loss was about 8.6%.
CC N (Fats, Oils and Margarine)
CT CARBOHYDRATES; EXTRACTION; GLYCOSIDES; OILSEEDS; RAPESEEDS; GLUCOSINOLATES

L1 ANSWER 15 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1992(01):N0030 FSTA
TI Lecithin in food systems.
AU Ziegelitz, R.
SO International Food Ingredients, (1991), No. 4, 18-24
ISSN: 0924-5863
DT Journal
LA English
AB Physical and chemical properties of lecithin (phospholipid) are presented and methods of extraction from oilseeds (soybean, rapeseed, corn, sunflower) demonstrated. Methods include: fractionation with acetone; fractionation with alcohol; acetylation, hydroxylation; dehydration and enzyme modification. Extraction of lecithin enhances emulsifying properties. Method of extraction adopted is according to end product use. Applications to the food industry discussed include: margarine; bakery products; milk and dairy products; chocolate; compound coatings; carbonated soft drinks; ice cream; and formation of release agents.
CC N (Fats, Oils and Margarine)
CT EMULSIFIERS; LECITHINS; PHOSPHOLIPIDS

L1 ANSWER 16 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1989(05):N0005 FSTA
TI Detoxification of rapeseed and rapeseed meal with special reference to Asian Brassica campestris varieties.
AU Dietz, H. M.
CS Univ. of Reading, Reading RG1 5AG, UK
SO Dissertation Abstracts International, B, (1988), 49 (3) 587: Order no. BRDX80902, 303pp.
ISSN: 0419-4217
DT Dissertation
LA English
AB Attempts were made to improve the nutritional quality of rapeseed and rapeseed meal with particular reference to the rapeseed var. available in Nepal. These var. were found to be higher in oil but lower in protein than European cv. of the same sp. The studies included: evaluation of the chemical composition of Nepalese rapeseed and of the oil processing methods used; examination of the hydrolysis pattern of the dominant glucosinolate (gluconapin); attempts to redirect enzymatic breakdown to yield products of low or no toxicity; and attempts to eliminate glucosinolates by aqueous extraction. Results included the following. The presence of oil was found to strongly inhibit glucosinolate hydrolysis in ground seed. When gluconapin was hydrolysed by the endogenous enzyme system, the respective isothiocyanate and cyanoepithioalkane were formed. Formation of the latter was strongly reduced by increasing hydrolysis temperature and by the presence of oil in the seed. Aqueous leaching of heat-treated Toria seeds reduced the glucosinolate content.
CC N (Fats, Oils and Margarine)
CT FLOURS; NUTRITIONAL VALUES; OILSEEDS; PROCESSING; RAPESEEDS; MEAL; RAPESEED MEAL

L1 ANSWER 17 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1989(04):N0016 FSTA
TI Improved method for the determination of the total glucosinolate content of rapeseed by determination of enzymically released glucose.
AU Heaney, R. K.; Spinks, E. A.; Fenwick, G. R.
CS Div. of Molecular Sci., AFRC Inst. of Food Res., Norwich Lab., Colney Lane, Norwich NR4 7UA, UK
SO Analyst, (1988), 113 (10) 1515-1518, 21 ref.
ISSN: 0003-2654
DT Journal
LA English
AB Total glucosinolate content of rapeseed was determined by a modified method involving measurement of glucose released by hydrolysis

with the enzyme myrosinase. Seeds were dried, ground and 200 mg placed in a test tube, to which 30 ml 70% v/v methanol (pre-heated to boiling) was added and stirred for 10 min. The mixture was then centrifuged. Extraction/centrifugation was repeated twice more, and the 3 extracts combined and rotary evaporated. Glucose was liberated by addition of myrosinase to a solution of this extract on a Sephadex mini-column and elution with water after 2 h at room temperature (25°C), and was then quantified. Analysis of a sample of rapeseed in triplicate on 10 occasions over 4 wk gave an overall mean of 61.2 μmol glucosinolate/g (s.d. 1.24 μmol/g, coefficient of variation 2.03%). Close agreement between results obtained by this method and by the original glucose release method showed that oil extraction, employed in the original method, was an unnecessary step. Reasonable agreement was obtained between results from HPLC and from glucose release.
CC N (Fats, Oils and Margarine)
CT GLYCOSIDES; OILSEEDS; RAPESEEDS; GLUCOSINOLATES

L1 ANSWER 18 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1988(07):N0030 FSTA
TI Carbohydrase hydrolysis of canola to enhance oil extraction with hexane.
AU Sosulski, K.; Sosulski, F. W.; Coxworth, E.
CS Saskatchewan Res. Council, 15 Innovation Boulevard, Saskatoon, Saskatchewan S7N 2X8, Canada
SO Journal of the American Oil Chemists' Society, (1988), 65 (3) 357-361, 10 ref.
ISSN: 0003-021X
DT Journal
LA English
AB Hydrolysis of 3 canola cv. with carbohydrase reduced oil extraction time and increased oil yield. The optimum pretreatment before hexane extraction of oil was flaking, autoclaving, adjustment to 30% seed moisture including 0.12% enzyme concentration (g enzyme protein/100 g flakes), and incubation for 12 h at 50°C, followed by drying to 4% moisture. Hexane extraction was enhanced by grinding the flakes. The relative order of enzyme efficiency in enhancement of oil extraction was mixed activity enzyme > β-glucanase >pectinase > hemicellulase > cellulase.
CC N (Fats, Oils and Margarine)
CT ENZYMES; GLYCOSIDASES; OILS; OILSEEDS; RAPESEED OILS; RAPESEEDS; SEEDS; CANOLA OILS; CARBOHYDRASES; HYDROLYSIS; YIELDS

L1 ANSWER 19 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1986(02):G0009 FSTA
TI Proceedings. 6th International rapeseed conference. Volume II.
AU McGregor, D. I.; Blake, J. A.; Pickard, M. D.; Anjour, K.; Diosady, L. L.; Rubin, L. J.; Trass, O.; Kozlowska, H.; Rotkiewicz, D.; Bock, H. D.; Masson, L.; Moreno, D.; Oliver, H.; Wittig, E.; Lee, S.; deMan, J. M.; Yiu, S. H.; Fulcher, R. G.; Altosaar, I.; Greilsamer, B.; Klauenberg, G.; Vaccarino, C.; Fenwick, G. R.; Butler, E. J.; Pearson, A. W.; Larsen, L. M.; Olsen, O.; Ploeger, A.; Sorensen, H.; Goh, Y. K.; Robblee, A. R.; Clandinin, D. R.; Krishna-Murthy, K. S.; Murthy, K. S.; Kantharaj, U.
CS Groupe Consultatif International de Recherche sur le Colza
SO (1983), pp. 889-1782, many ref.
DT Conference
LA English; French; German
AB [Continued from preceding abstract] Detoxification of Brassica juncea with ammonia, by McGregor, D. I., Blake, J. A. & Pickard, M. D. (pp. 1426-1431, 12 reference). Studies on β-recrystallization in low erucic acid rapeseed oil blends, by Anjou, K. (pp. 1444-1449). Solvent grinding and extraction of rapeseed, by Diosady, L. L., Rubin, L. J. & Trass, O. (pp. 1460-1465, 6 reference). Inactivation of the enzyme myrosinase in whole rapeseeds, by Kozlowska, H., Rotkiewicz, D. & Bock, H. D. (pp. 1466-1471, 10 reference). Stability of rapeseed oil, by Masson, L., Moreno, D., Oliver, H. & Wittig, E.

(pp. 1478-1483, 12 reference). Effect of surfactants on some physical properties of hydrogenated canola oil, by Lee, S. & deMan, J. M. (pp. 1484-1489, 10 reference). Processing effects on the structural and microchemical organization of rapeseed and its products, by Yiu, S. H., Fulcher, R. G. & Altosaar, I. (pp. 1490-1495, 11 reference). Husking and purification of rapeseed, by Greilsamer, B. (pp. 1496-1501, Fr). The hydrogenation of rapeseed oil, by Klauenberg, G. (pp. 1502-1507). Detoxification of rapeseed by hydrolysis treatment of the whole grain, by Vaccarino, C., Tripodo, M. M., Gregorio, A. de & Barbaccia, A. (pp. 1508-1512, 12 reference Fr). Low glucosinolate rapeseed meal and egg taint, by Fenwick, G. R., Butler, E. J. & Pearson, A. W. (pp. 1546-1551, 21 reference). Phenolic choline esters in rapeseed: possible factors affecting nutritive value and quality of rapeseed meal, by Larsen, L. M., Olsen, O., Ploeger, A. & Sorensen, H. (pp. 1577-1582, 6 reference). Effect of ammoniation of canola meal on the fishy odor and trimethylamine contents of eggs produced by brown-egg layers, by Goh, Y. K., Robblee, A. R. & Clandinin, D. R. (pp. 1583-1587, 11 reference). Preparation and nutritional evaluation of weaning foods based on mustard protein concentrate, by Krishna-Murthy, K. S.; Murthy, K. S. & Kantharaj, U. M. (pp. 1588-1593, 8 reference). [Continued in following abstract]
CC G (Catering, Speciality and Multicomponent Foods)
CT CONFERENCE PROCEEDINGS; RAPESEED OILS; RAPESEEDS; PROCEEDINGS

L1 ANSWER 20 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1982(03):N0103 FSTA
TI American Oil Chemists Society 72nd Annual Meeting Abstracts.
AU Naudet, M.; Sambuc, E.; Devinat, G.; Weber, E. J.; Yen, E. A.; Galliher, L.; Alexander, D. E.; Rukmini, C.; Vijjayaraghavan, M.; Melton, S. L.; Harrison, J.; Churchville, D.; Smith, K. T.; Rotruck, J. T.; Ranhotra, G. S.; Gelroth, J. A.; Winterringer, G. L.; Morris, E. R.; Ellis, R.; Tangkongchitr, U.; Sieb, P. A.; Hoseney, R. C.; Holaday, C. E.; McKinney, J. D.; Pestka, J. J.; Lee, S. S.; Lau, H. P.; Chu, F. S.; Wall, J. H.; Lillehoj, E. B.; Nesheim, S.; Brumley, W. C.
CS United States of America, American Oil Chemists Society
SO Journal of the American Oil Chemists' Society, (1981), 58 (7) 569A-612A
DT Conference
LA English
AB [Continued from preceding abstract.] Refinability of new-rapeseed oils, by M. Naudet, E. Sambuc & G. Devinat. Variability in oil contents, polyunsaturated fatty acids, and vitamin E isomers among corn inbreds, by E. J. Weber, E. A. Yen, L. Galliher & D. E. Alexander. Chemical, nutritional and toxicological evaluation of unconventional oils - mesta seed oil, by C. Rukmini & M. Vijayaraghavan. Extraction of ascorbyl palmitate from wheat flour and analysis by high-pressure liquid chromatography, by S. L. Melton, J. Harrison & D. Churchville. Chemical and biological studies of phytate-mineral interactions, by K. T. Smith & J. T. Rotruck. Bioavailability of certain minerals in phytate-containing foods, by G. S. Ranhotra, J. A. Gelroth & G. L. Winterringer. Studies on phytate/zinc molar ratio and bioavailability of dietary zinc, by E. R. Morris & R. Ellis. Fate of phytate in breadmaking using whole wheat flour, by U. Tangkongchitr, P. A. Sieb & R. C. Hoseney. Minicolumn chromatography: the state of the art, by C. E. Holaday. A rapid method for determination of aflatoxins in cottonseed and meal, by J. D. McKinney. Enzyme-linked immunosorbent assay for T-2-toxin, by J. J. Pestka, S. S. Lee, H. P. Lau & F. S. Chu. Reversed-phase high-performance liquid chromatographic separation of xanthomegnin, viomellein, and rubrosulphin, by J. H. Wall & E. B. Lillehoj. Confirmation of identity of aflatoxins, by S. Nesheim & W. C. Brumley. [Continued in following abstract.]
CC N (Fats, Oils and Margarine)
CT CONFERENCE PROCEEDINGS; FATS; OILS; PROCEEDINGS; RESEARCH

L1 ANSWER 21 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1981(09):N0487 FSTA
TI Acidity changes in rapeseed oil during storage under diversified

conditions.
AU Kmieciak, S.; Mastalerz, R.; Zwierzykowski, W.
CS Dep. of Chem. & Food Tech., Tech. Univ., Gdansk, Poland
SO Acta Alimentaria Polonica, (1980), 6 (3) 123-133, 2 ref.
DT Journal
LA English
SL Polish
AB Free fatty acid (FFA) content, which greatly influences commercial quality of the oil, is influenced by seed quality, the oil rendering process (pressing or extraction) and refining (hydration, neutralization). 3 batches of seeds were examined, together with 2 sources of each of the following: (i) raw rapeseed oil, pressed, non-hydrated; (ii) raw oil by extraction, non-hydrated; (iii) raw oil, extracted and hydrated; and (iv) commercial oil, a mixture of pressed and extracted oils and partly neutralised. Hydration involved addition of 2% hot water, centrifugation and drying. Each sample was stored at -4° , 20° and 37° C, with or without periodical aeration (shaking). FFA were determined over 1 month and results are presented in tables and graphs. FFA of oil from fresh undamaged seeds was 0.89%, but 28.4% from broken seeds (a major reason for poor quality oils). (i) Oils were very stable, with no acidity increases at any temperature, with or without shaking. FFA in (ii) were unchanged at -4° C, but reached 50% at other temperature with shaking, and without shaking 40% at 20° C and 20% at 37° C. FFA in (iii) increased only slightly (10%) at 20° and 37° C. Phospholipid content was 4 x higher in (ii) than (iii). At -4° C (iv) was stable, but FFA increases with shaking were 95% (20° C) and 50% (37° C), and unshaken 120% (20° C) and 130% (37° C). This commercial product showed low resistance to glyceride decomposition; FFA could double in 1 month (attributed to destruction of the natural stabilizing system by partial neutralization). In aerated samples the FFS increase slowed down after 20 days at 37° C, possibly due to enzyme deactivation.
CC N (Fats, Oils and Margarine)
CT EXTRACTION; FATTY ACIDS; MOISTURE CONTENT; NEUTRALIZATION; PRESSING; RAPESEED OILS; REFINING; STORAGE; HYDRATION; STORED

L1 ANSWER 22 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1981(02):G0129 FSTA
TI Removal of antinutritive substance from rapeseed and nutritive properties of proteins.
In 'Proceedings. 5th International rapeseed conference. Volume II.' [see FSTA (1981) 13 2N47].
AU Lieden, S.-A.; Hambraeus, L.; McDonald, B. E.; Groupe Consultatif International de Recherche sur le Colza [5th Rapeseed Symposium]
CS Inst. of Nutr., Univ. of Uppsala, S-751 22 Uppsala, Sweden
SO (1979), 2, 138-140, 9 ref.
DT Conference
LA English
AB Antinutrients were removed from rapeseed by solvent extraction and centrifugation or dialysis and protein separated by gel filtration. Growing and pregnant rats were used to assess biological value (BV) of proteins and antinutrients, as compared to those on basal diets. Optimal glucosinolate removal, as tested by feeding trials, avoided hydrolysis by enzyme denaturation using (i) water at 100° C, (ii) dilute HCl at 0° C, (iii) dilute NaOH at room temperature or (iv) distilled water at 0° C. Glucosinolate was readily removed from (iii) by gel filtration and from (i), (ii) and (iv) by repeated washings. Phytic acid solvent extraction was not 100% successful though gel filtration of alkali extracted protein was. Less extractable phytic acid proved least enzymically digestible, causing Zn deficiency. Aliphatic esters of mol. weight approx. 800 were separated by methanol extraction at -75° C and 2 fractions EI and EII found by column chromatography and separated by IR analysis may be associated with Zn deficiency and anorexia and could have been produced by heat treatment.

Fibre had no effect on growth, protein utilization, or serum Fe or Zn. Hot water extraction of phenolics did not affect protein utilization. Most antinutritive factors in rapeseed protein are soluble in distilled water at 0° C. The protein has a greater protein efficiency ratio, BV and net protein utilization than casein or soy flour, and higher true digestibility than the latter.
CC G (Catering, Speciality and Multicomponent Foods)
CT NUTRITIONAL VALUES; PROTEIN PRODUCTS; PROTEINS; RAPESEEDS; TOXICITY; ANTINUTRIENTS; BIOLOGICAL VALUES; RAPESEED; RAPESEED PROTEINS

L1 ANSWER 23 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1980(01):G0052 FSTA
TI Rapeseed protein concentrate preparation and evaluation.
AU Jones, J. D.; United States of America, American Oil Chemists Society [Oilseed Protein Symposium]
CS Agric. Canada, Food Res. Inst., Cent. Exp. Farm, Ottawa K1A 0C6, Canada
SO Journal of the American Oil Chemists' Society, (1979), 56 (8) 716-721, 22 ref.
DT Conference
LA English
AB Problems with utilization of rapeseed meal in human food application are briefly considered, with special reference to glucosinolates (which are hydrolysed to form goitrogens) and the high fibre concentration A procedure for preparation of rapeseed protein concentrate, the FR-171 process, is described; this comprises cracking, air classification to separate hulls from meats, enzyme inactivation by means of boiling water, extraction of water-soluble constituents, fluidized-bed drying, defatting by solvent extraction with hexane, and grinding of the defatted product. Data are given for the fat, protein, fibre, ash, non-fat extractable matter, glucosinolate, isothiocyanate, and goitrin content and amino acid composition of rapeseed protein concentrates from various var. Protein concentrate yield was approx. 24.5% of the rapeseed weight; 90% of the glucosinolates were removed. Protein quality was superior to that of other oilseeds. Rat feeding trials showed poor growth due to Zn deficiency syndrome, attributable to binding of dietary Zn by phytate present in the protein concentrate. [See FSTA (1980) 12 1G30.]
CC G (Catering, Speciality and Multicomponent Foods)
CT FLOURS; PROTEIN CONCENTRATES; PROTEIN PRODUCTS; RAPESEEDS; COMPOSITION; MEAL; RAPESEED; RAPESEED MEAL; RAPESEED PROTEIN CONCENTRATES

L1 ANSWER 24 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1978(07):G0458 FSTA
TI [Physico-chemical properties and nutritive value of rapeseed proteins extracted by fermentation.]
In ''Internationaler Rapskongress'' [see FSTA (1978) 10 7N322].
AU Staron, T.; Internationaler Rapskongress
SO (Undated), pp. 615-624, 18 ref.
DT Conference
LA French
AB This review discusses the physico-chemical properties (mainly solubility and composition), and detailed amino acid composition of rapeseed protein fractions (before and after fermentation), bacteriological counts, enzyme (trypsin) antagonist and organ hypertrophy effects, nutritive value and food applications of the fermented proteins (beverages, ice cream, milk, soups and sauces, meat products, bakery products). Fermentation treatment acts by hydrolysing thioglucosides and degrading isothiocyanates, hydrolysing and degrading polysaccharides to organic acids, degrading α-proteins (heteroproteins), solubilizing all protein fractions and freeing β- and γ-proteins (with no isoelectric pH, and insoluble at pH 4, resp.).
CC G (Catering, Speciality and Multicomponent Foods)
CT EXTRACTION; FERMENTATION; NUTRITIONAL VALUES; PROTEIN PRODUCTS;

PROTEINS; RAPESEEDS; FERMENTED RAPESEED; FOODS;
PHYSICO-CHEMICAL; RAPESEED; RAPESEED PROTEINS

L1 ANSWER 25 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1977(01):N0085 FSTA
TI Shaker-conditioner for oilseeds.
AU Witte, J. F.
CS Stork-Amsterdam BV, Postbus 108, Amstelveen, Netherlands
SO Oleagineux, (1976), 31 (4) 177-179
DT Journal
LA English
SL French; Spanish
AB A process is described for use in the shaker-conditioner in which seeds in a semi-fluidized condition are heated with steam at atmospheric pressure to 100°C within 30 s, kept at 100°C for a very short time and dried by hot air at 65°C. The unit consists of a perforated shaker-conveyor with a built-on steam or gas distributing box and draught hood. The bed of seeds (crused, ground or whole) in the conveyor, is expanded by the combined gas velocity and shaking movement. The overall process requires 3-5 min. Fluidized processing ensures enzyme inactivation in 1-5 min. Extraction tests in a hydraulic press revealed 1.0% residual fat in solvent (vs. 2.2% with a conventional cooker), 19.2% in press cake (vs. 26.9%) and hourly filtration rates of 35 000 kg filtrate/m.sup.2 for rapeseed (vs. 10 000), 40 000 for linseed (vs. 2500) and 50 000 for soybean (vs. 30 000). Other advantages are low maintenance costs, low power consumption, light weight construction and min. supervision.
CC N (Fats, Oils and Margarine)
CT EXTRACTION; OILSEEDS; CONDITIONED; SHAKER CONDITIONERS

L1 ANSWER 26 OF 26 FSTA COPYRIGHT 2007 IFIS on STN
AN 1971(05):G0165 FSTA
TI Production of rapeseed flour for human consumption.
AU Tape, N. W.; Sabry, Z. I.; Eapen, K. E.
CS Food Res. Inst., Canada Dept. of Agric., Ottawa, Ontario, Canada
SO Canadian Institute of Food Technology Journal, (1970), 3 (3) 78-81, 9 ref.
DT Journal
LA English
SL French
AB The growth of rapeseed in Canada is increasing rapidly and Canada is the world's largest exporter. Rapeseed oil is a useful edible oil. At present rapeseed meal is used in feeds for livestock and poultry but its use is limited by the presence of thioglucosides. A method for the removal of these thioglucosides is given and effective removal was possible in 4 extraction stages. The process is shown diagrammatically. The composition of rapeseed flour and meal is compared with that of casein and it is noted that the amino acids are low compared with those in casein but in most cases the balance is the same. Enzyme inactivation is also essential if non-toxic products are required.
CC G (Catering, Speciality and Multicomponent Foods)
CT AMINO ACIDS; ENZYMES; FLOURS CEREAL; GLYCOSIDES; AMINO ACID; COMPOSITION; FLOUR; FOOD; INACTIVATION; PROTEIN; PROTEINS (UNCONVENTIONAL); RAPESEED; THIOGLUCOSIDES

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        155701 EXTRACTION
        804118 ENZYME
L2          15 RAPESEED AND EXTRACTION AND ENZYME

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L2 ANSWER 1 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2006:1118701 Document No. 145:454133 Plant extraction process using a lipolytic enzyme composition.. Andersen, Keld Ejdrup; Borch, Kim; Krebs Lange, Niels Erik; Steffen, Ernst; Landvik, Sara; Schnorr, Kirk Matthew (Novozymes A/S, Den.). PCT Int. Appl. WO 2006111163 A1 20061026, 16pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IS, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2006-DK81 20060213. PRIORITY: DK 2005-578 20050421.

AB A method for producing a plant extract comprises incubating a plant material with an enzyme composition comprising a lipolytic enzyme, preferably a cutinase.

L2 ANSWER 2 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2006:151105 Document No. 144:190702 Method for the enzymatic production and/or modification of phosphatides. Skolaut, Alexander; Allin, Tatjana; Hills, Geoffrey; Haeser, Katrin (Bioghurt Biogarde Gmbh & Co. KG, Germany). PCT Int. Appl. WO 2006015773 A2 20060216, 13 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IS, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (German). CODEN: PIXXD2. APPLICATION: WO 2005-EP8374 20050802. PRIORITY: DE 2004-102004038443 20040807.

AB Disclosed is a method for enzymically producing and/or modifying phosphatides, in which the head group is replaced with the aid of phospholipase D (PLD) obtained from Streptoverticillium flavopersicum,

Streptoverticillium netropsis, and/or Streptomyces netropsis. In said method, the enzyme can be used in both purified form and immobilized form as a raw or partially purified PLD-containing fermentation broth.

Lecithins which are reacted especially to phosphatidic acid, phosphatidylserine, phosphatidylcholine, phosphatidylethanolamine, phosphatidylinositol, and/or phosphatidylglycerol in the presence of divalent metal ions at pH values ranging between 4.0 and 9.0 and reaction temps. ranging between 5 and 60 °C can be used. The inventive method is characterized particularly by its specific effect and the marked activity of the utilized PLD while the obtained reaction solns. are nearly free of phosphatidic acid.

L2 ANSWER 3 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2006:77574 Document No. 145:488038 Direct enzymic extraction technology of rapeseed. Hu, Xiaohong; Di, Qiang; Zhang, Xincai; Wang, Chao (Wuhan Polytechnic University, Wuhan, 430023, Peop. Rep. China). Zhongguo Youzhi, 29(8), 13-15 (Chinese) 2004. CODEN: ZHYOEG. ISSN: 1003-7969. Publisher: Zhongguo Youzhi Zazhishe.

AB Enzyme used in rapeseed direct extraction technol. was studied. The extraction technol. parameters were optimized by orthogonal expts. The oil yield was high under the conditions as follows: the water content of rapeseed flake was 12%, the concentration of protease 1%, and extraction was carried out with protease (1%) at 50° for 12 h or with cellulase (1%) for 24 h. The oil yield with cellulase was superior to that with protease.

L2 ANSWER 4 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2005:1044340 Document No. 144:447994 Combined effect of operational variables and enzyme activity on aqueous enzymatic extraction of oil and protein from rapeseed. Liu, Zhiqiang; He, Jianhua; Zeng, Yunlong; Jin, Hong (Department of Chemical Engineering, Hunan University of Science and Technology, Xiangtan, 411201, Peop. Rep. China). Zhongguo Nongye Kexue (Beijing, China), 37(4), 592-596 (Chinese) 2004. CODEN: CKNYAR. ISSN: 0578-1752. Publisher: Zhongguo Nongye Kexue Bianjibu.

AB Complex enzyme, protease, cellulase, pectinase and hemicellulase were used in the process of aqueous enzymic extraction of rapeseed oil, and then comparing this method with an enzymic water leaching (CK). The results indicated that different enzymes had different effects on oil and protein extraction rate in the process, among which complex enzyme ranges the first, protease the second and then cellulase. The above three enzymes were all superior to CK, while pectinase and hemicellulase were inferior to it because of their unobvious effect. Response surface methodol. was adopted to investigate the effect of parameter of enzyme reaction on rapeseed oil and protein extraction rate. The results showed that solid to liquid had strong effect on oil and protein extraction rate, enzyme/substrate had an obvious effect on oil extraction rate and treatment time had an obvious effect on protein extraction rate.

L2 ANSWER 5 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2004:1020804 Document No. 143:228289 Enzymatic aqueous extraction of rapeseed oil and non-toxic protein-technology and kinetics studies on hydrolysis of rapeseed protein with oil contained. Liu, Zhiqiang; Liu, Bo; Zeng, Yunlong (Dept. of Chemical Engineering, Hunan University of Science and Technology, Xiangtan, 411201, Peop. Rep. China). Zhongguo Liangyou Xuebao, 19(4), 58-62 (Chinese) 2004. CODEN: ZLXUFO. ISSN: 1003-0174. Publisher: Zhongguo Liangyou Xuebao Bianjibu.

AB The enzymic hydrolysis of rapeseed protein with oil contained by Alcalase was carried out at pH 8.0, 50 degree. The yields of rapeseed oil and protein were 69%-90%, and 66%-81%, resp., which were higher than those by water extraction,. The results indicated that the reaction rate increased obviously with decreasing size of the solid particles in the protein milk, and that the overall rate of hydrolysis

diminished exponentially vs. the hydrolysis degree. Too high substrate levels induced the deactivation of enzyme during hydrolysis. Based on the exptl. data, a kinetic model equation simulating the enzymic hydrolysis of rapeseed protein with oil contained was developed, which could be used to direct and optimize the enzymic hydrolysis.

L2 ANSWER 6 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2004:623982 Document No. 142:54989 Effect of enzyme extract on rapeseed microstructure and oil recovery. Srivastava, B.; Agrawal, Y. C.; Sarker, B. C.; Kushwaha, Y. P. S.; Singh, B. P. N. (Department of Post Harvest Process and Food Engineering, G.B. Pant University of Agriculture and Technology, Pantnagar, 263 145, India). Journal of Food Science and Technology, 41(1), 88-91 (English) 2004. CODEN: JFSTAB. ISSN: 0022-1155. Publisher: Association of Food Scientists and Technologists (India).

AB The effect of enzymic pre-treatment on microstructural changes in rapeseed was studied using a scanning electron microscope (SEM). The microstructural changes at various reaction times correlate with the increase in oil recovery by solvent extraction The study validated the rationale behind the enhanced oil recovery from oilseeds due to enzyme pre-treatment that it is because of the enzyme induced biodegrdn. of cell walls and the break up of complex lipoprotein and lipopolysaccharide mols. into simple mols. releasing extra oil than otherwise extractable.

L2 ANSWER 7 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2003:856056 Document No. 139:347485 Identification, cloning and sequences of phospholipases from environmental sources and their use in oil degumming and other industrial methods. Gramatikova, Svetlana; Hazlewood, Geoff; Lam, David; Barton, Nelson (Diversa Corporation, USA). PCT Int. Appl. WO 2003089620 A2 20031030, /281 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US12556 20030421. PRIORITY: US 2002-374313P 20020419.

AB The invention provides novel polypeptides having phospholipase activity, including, e.g., phospholipase A, B, C and D activity, patatin activity, lipid acyl hydrolase (LAH) activity, nucleic acids encoding them and antibodies that bind to them. The nucleotide sequences and the encoded amino acid sequences of 53 phospholipases from environmental sources are provided. Computer systems and programs (including exemplary BLAST program) for sequence identification are disclosed. Industrial methods, e.g., oil degumming, and products comprising use of these phospholipase are also provided.

L2 ANSWER 8 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
2003:282287 Document No. 138:270687 Fractionation of oilseed press cakes and meals. Kvist, Sten; Carlsson, Tommie; Lawther, John Mark; Basile De Castro, Fernando (Biovelop International B.V., Neth.; Basile De Castro, Fernando). PCT Int. Appl. WO 2003028473 A1 20030410, 21 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-SE1816 20021004. PRIORITY: SE 2001-3329 20011004.

AB A process for the fractionation of oilseed cakes and meals (e.g.,

rapeseed cake) is disclosed. During fractionation, the cake or meal is subjected to enzymic treatment with polysaccharidases with intermittent wet milling, followed by heat treatment to facilitate separation of insol. from soluble phases by centrifugal forces. Sequential centrifugation and ultrafiltration steps are carried out in order to yield a fiber-rich fraction, at least three protein-rich fractions, in the case of oilseed cakes at least one emulsified oil fraction, a sugar-rich fraction, and a phytate-rich fraction. The fractions are suitable for use in food, feed, nutraceutical and pharmaceutical applications. Thus, a rapeseed cake (31% protein, 23.5% oil) is subjected to enzyme hydrolysis with a multienzyme complex (β-glucanase, pentosanase, hemicellulase, pectinase) which is subsequently inactivated at 95°. The reaction mixture is centrifuged while hot to obtain a soluble fraction, which is resuspended in water and centrifuged again to yield layers of emulsified oil, solubles, and two bottom layers of protein fiber-rich ppts. Protein and sugar fractions are obtained by ultrafiltration of the solubles; the permeate (sugar fraction) is centrifuged to obtain a precipitate (phytate-rich fraction) and the permeate soluble phase is evaporated and centrifuged to afford further phytate- and sugar-rich fractions.

L2 ANSWER 9 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
1999:392126 Document No. 131:31265 The effect of rapeseed treatment by microwave and radio-frequency application on oil extraction and oil quality. Part 2. Influence on oil quality. Irfan, Irfan; Pawelzik, Elke (Institute Agricultural Chemistry, Dep. Plant Products Quality, Univ. Gottingen, Gottingen, D-37075, Germany). Fett/Lipid, 101(5), 168-171 (English) 1999. CODEN: FELIFX. ISSN: 0931-5985. Publisher: Wiley-VCH Verlag GmbH.

AB The influence of microwave and radio-frequency (RF) pretreatments of rapeseed on oil quality was investigated. Oil was extracted from the seeds through mech. pressing. Few quality parameters of the gained oil as well as special enzymic activities of the seeds were analyzed. Microwave application at temps. ranging at 80-100° (surface temperature of the seed) reduced the acid and peroxide values in oil, while the intensity of the oil color increased. There was no effect noted on iodine value. Thiobarbituric acid value (TBA) and lipid acid composition of oil were not affected either. The peroxidase and methylumbelliferyl palmitic acid ester hydrolase (MUPase) activities in the seeds decreased, which is very important in relation to the storability and the later processing of seeds or oils. The advantage of radio frequency (RF) compared to microwaves was that no burning aroma was emitted by treating rapeseeds at 120° so that the oil yield of the seeds by pressing could be further improved. Despite this high temperature, some parameters of oil quality (acid, peroxide, and TBA values) of treated seeds have not so much changed in general in comparison to untreated control. Like microwaves, RF-waves did not affect lipid acid composition of the oil.

L2 ANSWER 10 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
1997:794790 Document No. 128:74448 Study on rapeseed direct solvent extraction technology. Hu, Xiaohong; Zhang, Weinong; Zhang, Liwei; Xiong, Wenhua; Hu, Sheng; Yu, Jinxia (Wuhan Coll. Food Ind., Wuhan, 430022, Peop. Rep. China). Zhongguo Liangyou Xuebao, 12(5), 25-27, 39 (Chinese) 1997. CODEN: ZLXUFO. ISSN: 1003-0174. Publisher: Zhongguo Liangyou Xuehui.

AB Direct extracting oil from rapeseed by using enzyme and 6# solvent was investigated. More light color oil was obtained and good quality meal with less residual oil by this technol., so this tech. method provides a new way for direct solvent extraction in the high-oil-content seed such as rapeseed.

L2 ANSWER 11 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN
1997:369775 Document No. 126:342525 Methods for isolating polyhydroxy alkanoates from plants. Martin, David P.; Peoples, Oliver P.; Williams,

Simon F. (Metabolix, Inc., USA). PCT Int. Appl. WO 9715681 A1 19970501, 34 pp. DESIGNATED STATES: W: AU, CA, JP; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US16921 19961023. PRIORITY: US 1995-548840 19951026.

AB Methods are provided for separating polyhydroxy alkanoates ("PHAs") from plants, such as transgenic oil crop plants. The methods advantageously permit both the oil and the PHAs to be recovered from the plant biomass. To isolate the PHAs, in one embodiment, a biomass derived from an oil crop plant is pre-processed, for example by grinding, crushing, or rolling. The oil then is extracted from the biomass with a first solvent in which the oil is soluble and in which the PHAs are not highly soluble to remove the oil. The biomass then can be extracted with a second solvent in which the PHA is soluble, to sep. the PHA from the biomass. Alternatively, the PHA-containing biomass is treated with a chemical or biochem. agent, such as an enzyme, to chemical transform the PHA into a PHA derivative The PHA derivative then is separated from the mixture using, for example, a phys. separation process such as distillation, extraction or chromatog. Advantageously, by using the method, plant oils, PHAs, and PHA derivs. can be recovered and purified on a large scale from oil-containing plants such as transgenic oil crop plants.

L2 ANSWER 12 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN

1994:189935 Document No. 120:189935 Enzymic pretreatment to enhance oil extraction from fruits and oilseeds: a review. Dominguez, H.; Nunez, M. J.; Lema, J. M. (Dep. Chem. Eng., Univ. Santiago de Compostela, Santiago de Compsotela, 15706, Spain). Food Chemistry, 49(3), 271-86 (English) 1994. CODEN: FOCHDJ. ISSN: 0308-8146.

AB A review with refs. Enzymic treatment to enhance oil recovery from olive, avocado or coconut pastes has been used with excellent results both on a laboratory and industrial scale (olive), obtaining the oil in shorter times and increasing the capacity of the equipment. This treatment was tried for the extraction of oil and protein from oilseeds on a laboratory scale (peanut, rapeseed - also in a pilot plant - sunflower and soybean). Considering that two thirds of the total fat and oil production is supplied by oilseeds (soybean, sunflower, rape and palm accounting for more than 70% of vegetable oils) this is a promising field for biotechnol. applications. In the present work the different processes, as well as the factors affecting their efficiency, are discussed.

L2 ANSWER 13 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN

1991:557508 Document No. 115:157508 The aqueous extraction of glucosinolates from rapeseed. Dietz, H. M.; King, R. D.; Harris, R. V. (Dep. Food Sci. Technol., Univ. Reading, Whiteknights/Reading, RG6 2AP, UK). International Journal of Food Science and Technology, 26(1), 53-63 (English) 1991. CODEN: IJFTEZ. ISSN: 0950-5423.

AB The losses of seed constituents from Brassica campestris var. toria for various conditions of the leaching process developed at the Overseas Development Natural Resources Institute (ODNRI) were studied. Boiling seeds for 3 min at a seed/water ratio of 1:3 was sufficient to allow inactivation of the enzyme myrosinase; higher ratios did not increase losses in any of the constituents studied. Heat treatment of the seeds (5 min in boiling water) reduced the nitrogen solubility at the native pH (6.5) from 28 to 8%. The pH had little effect on the extent of glucosinolate leaching from coarsely ground seeds and the min. protein loss occurred close to the native pH. Increased water temps. (40, 50, and 80°) did not lead to an increased leaching efficiency over ambient temperature (20°). Seed/water ratio was the most important factor during leaching. Cross-current extraction over three stages at a seed/water ratio of 1:10 reduced the glucosinolate content by 98% whereas the crude protein loss was about 8.6%.

L2 ANSWER 14 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN

1986:48071 Document No. 104:48071 A simple and rapid method of

quantitatively measuring the glucosinolate concentration of rapeseed. Smith, D. B.; Parsons, D. G.; Starr, Carol (Plant Breed. Inst., Cambridge, CB2 2LQ, UK). Journal of Agricultural Science, 105(3), 597-603 (English) 1985. CODEN: JASIAB. ISSN: 0021-8596.

AB A method is described in which glucosinolates are simultaneously extracted from crushed seeds and degraded by myrosinase. Glucose released by myrosinase is measured on a Technicon Automated analyzer using a single reagent. Charcoal is used prior to glucose determination to clarify the exts. and remove enzyme inhibitors. When conditions were optimized for samples of 200 mg, yields were slightly greater than those obtained from corresponding samples of defatted meal. Relative standard deviations of .apprx.4% were obtained over a range of >100 μmol glucosinolate/g seed. The method, which gives a rapid and precise determination of glucosinolates, will be of value to plant breeders selecting from populations having low and intermediate concns. of glucosinolate.

L2 ANSWER 15 OF 15 CAPLUS COPYRIGHT 2007 ACS on STN

1975:576919 Document No. 83:176919 Use of enzymes for vegetable-oil extraction. Lanzani, A.; Petrini, M. C.; Cozzoli, O.; Gallavresi, P.; Carola, C.; Jacini, G. (Stn. Sper., Ind. Oli Grassi, Milan, Italy). Rivista Italiana delle Sostanze Grasse, 52(7), 226-9 (English) 1975. CODEN: RISGAD. ISSN: 0035-6808.

AB Seeds were ground, shaken with pH 5.02 buffer containing 3% enzyme (based on amount of seed), heated at 40° for 1 hr, 50° for the 2nd hr, and 65° for the 3rd hr, followed by centrifugation to sep. the oil. The enzymes used were: proteinase [9001-92-7], pepsin [9001-75-6], cellulase [9012-54-8], and polygalacturonase [9032-75-1]. With rapeseed, maximum oil recovery was 78% with 1.5% proteinase and 1.5% polygalacturonase, but it was 75% with proteinase alone and 49 and 44% with cellulase and polygalacturonase alone, resp. Peanut oil yield was 72% without any of the enzymes, and this was increased to 78% with pepsin alone or with cellulase. Sunflower oil recovery was 30% without enzymes, and was increased to a maximum of 52% with cellulose plus polygalacturonase.

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=> s rapeseed and olsen
          9629 RAPESEED
          1661 OLSEN
L3           2 RAPESEED AND OLSEN

=> d l3 cbib
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L3 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN

1998:751342 Document No. 130:153099 Effects of rice-based cropping system, organic manure and groundwater level on phosphate sorption by paddy soils derived from red earth. Zhang, Yangzhu; Jiang, Youli; Huang, Yunxiang; Hu, Ruizhi; Xiao, Yongnan (Department of Natural Resources, Hunan Agricultural University, Changsha, 410128, Peop. Rep. China). Turang Xuebao, 35(3), 328-337 (Chinese) 1998. CODEN: TJHPAE. ISSN: 0564-3929. Publisher: Kexue Chubanshe.

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=> d l3 cbib 2
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L3 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN

1990:570920 Document No. 113:170920 Comparison of parameters of soil phosphate availability for the northwestern Canadian prairie. Soon, Y. K. (Res. Stn., Agric. Canada, Beaverlodge, AB, T0H 0C0, Can.). Canadian Journal of Soil Science, 70(2), 227-37 (English) 1990. CODEN: CJSSAR. ISSN: 0008-4271.

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=> s soybean or peanut
         14871 SOYBEAN
          3705 PEANUT
L4       18074 SOYBEAN OR PEANUT

=> s l4 and extraction and enzyme
         31232 EXTRACTION
         35041 ENZYME
L5         105 L4 AND EXTRACTION AND ENZYME

=> d l5 and fraction
'AND' IS NOT A VALID FORMAT FOR FILE 'FSTA'
'FRACTION' IS NOT A VALID FORMAT FOR FILE 'FSTA'

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IALL --------- ALL, indented with text labels
DALL --------- ALL, delimited (end of each field identified)
IBIB --------- BIB, indented with text labels
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ABS ---- AN, AB
IND ---- AN, CC, IT
ALL ---- AN, TI, AU, CS, SO, PI, PRAI, DT, LA, SL, AB, CC, IT
TRIAL -- AN, TI, CC
HIT ---- ALL FIELDS CONTAINING HIT TERMS
KWIC --- ALL HIT TERMS PLUS 20 WORDS ON EITHER SIDE
OCC ---- LIST OF DISPLAY FIELDS CONTAINING HIT TERMS
HIT TERMS WILL BE HIGHLIGHTED IN ALL DISPLAYABLE FIELDS
EXCEPT MAPC.
TO DISPLAY A PARTICULAR FIELD OR FIELDS,  ENTER THE DISPLAY FIELD
CODES.  FOR A LIST OF DISPLAY FIELD CODES, ENTER 'HELP DFIELDS'
AT AN ARROW PROMPT (=>).  EXAMPLES OF FORMATS INCLUDE: 'BIB';
'TI'; 'AU,SO'.  YOU MAY SPECIFY THE FORMAT FIELDS IN ANY ORDER,
AND THE INFORMATION WILL BE DISPLAYED IN THE SAME ORDER AS THE
FORMAT SPECIFICATION.
THE SAME FORMATS (EXCEPT FOR HIT, KWIC, AND OCC) MAY BE USED WITH
THE DISPLAY ACC COMMAND TO DISPLAY THE RECORD FOR A SPECIFIED
ACCESSION NUMBER.
ENTER DISPLAY FORMAT (BIB):s l5 and fraction
'S' IS NOT A VALID FORMAT FOR FILE 'FSTA'

The following are valid formats:

IALL --------- ALL, indented with text labels
DALL --------- ALL, delimited (end of each field identified)
IBIB --------- BIB, indented with text labels
BIB ---- AN, TI, AU, CS, SO, PI, PRAI, DT, LA,SL
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ABS ---- AN, AB
IND ---- AN, CC, IT
ALL ---- AN, TI, AU, CS, SO, PI, PRAI, DT, LA, SL, AB, CC, IT
TRIAL -- AN, TI, CC
HIT ---- ALL FIELDS CONTAINING HIT TERMS
KWIC --- ALL HIT TERMS PLUS 20 WORDS ON EITHER SIDE
OCC ---- LIST OF DISPLAY FIELDS CONTAINING HIT TERMS
HIT TERMS WILL BE HIGHLIGHTED IN ALL DISPLAYABLE FIELDS
EXCEPT MAPC.
TO DISPLAY A PARTICULAR FIELD OR FIELDS, ENTER THE DISPLAY FIELD
CODES. FOR A LIST OF DISPLAY FIELD CODES, ENTER 'HELP DFIELDS'
AT AN ARROW PROMPT (=>). EXAMPLES OF FORMATS INCLUDE: 'BIB';
'TI'; 'AU,SO'. YOU MAY SPECIFY THE FORMAT FIELDS IN ANY ORDER,
AND THE INFORMATION WILL BE DISPLAYED IN THE SAME ORDER AS THE
FORMAT SPECIFICATION.
THE SAME FORMATS (EXCEPT FOR HIT, KWIC, AND OCC) MAY BE USED WITH
THE DISPLAY ACC COMMAND TO DISPLAY THE RECORD FOR A SPECIFIED
ACCESSION NUMBER.
ENTER DISPLAY FORMAT (BIB):all

L5 ANSWER 1 OF 105 FSTA COPYRIGHT 2007 IFIS on STN
AN 2007:R0277 FSTA
TI Effects of the partial substitution of dietary fish meal by differently processed soybean meals on growth performance, nutrient digestibility and activity of intestinal brush border enzymes in the European sea bass (Dicentrarchus labrax).
AU Tibaldi, E.; Hakim, Y.; Uni, Z.; Tulli, F.; Francesco, M. de; Luzzana, U.; Harpaz, S.
CS Correspondence address, S. Harpaz, Dep. of Aquaculture, Agric. Res. Org., Volcani Cent., PO Box 6, Bet Dagan 50250, Israel. Tel. +972 3 9683388. Fax +972 3 9605667. E-mail harpaz(a)agri.huji.ac.il
SO Aquaculture, (2006), 261 (1) 182-193
ISSN: 0044-8486
DT Journal
LA English
AB Effects upon nutrient digestibility, growth performance, intestinal brush border enzyme activity, and morphometric and flesh quality in European sea bass (Dicentrarchus labrax), of replacing dietary fish meal with soy meals subjected to various forms of processing, were investigated. Fish weighing 187.8 ± 1.4 g were fed a fish meal-based control diet or feed containing 1 of the following in place of fish meal protein: 25% toasted, dehulled and solvent extracted soy meal (SE25); 50% dehulled and toasted soy beans subjected to dry extrusion and mechanical oil extraction (ME50); 50% enzyme-treated soy meal (ET50); or 30% enzyme-treated soy meal and 30% toasted, dehulled and solvent extracted soy meal (SE+ET/60). Crude lipid, crude protein, DM and gross energy apparent digestibility coefficient were similar for SE+ET/60 and ME50, but better for other treatments. Control fish exhibited higher feed conversion ratio, gross protein retention efficiency and specific growth rate values than those fed ME50, but no other diet. Protein efficiency ratio was similar among all groups except ME50-fed fish. Activities of leucine amino peptidase and maltase were similar among control and test fish. In contrast, however, γ-glutamyl transpeptidase activity was reduced in the upper intestinal section by feeding soy meal, and alkaline phosphatase activity was reduced by feeding all soy meal-containing diets except SE25. No diet-dependent effects upon whole body composition and slaughter yield were observed, but feeding soy meal to sea bass reduced the weight of their livers.
CC R (Fish and Marine Products)
CT ENZYMES; FEEDS; FISH; LIVERS; WEIGHT; COMPOSITION; FEEDING; FISH LIVERS; SEA BASS; WT.

=> d his

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      (FILE 'HOME' ENTERED AT 13:29:21 ON 09 APR 2007)

      FILE 'FSTA' ENTERED AT 13:29:43 ON 09 APR 2007
L1           26 S RAPESEED AND EXTRACTION AND ENZYME

      FILE 'CAPLUS' ENTERED AT 13:31:24 ON 09 APR 2007
L2           15 S RAPESEED AND EXTRACTION AND ENZYME
L3            2 S RAPESEED AND OLSEN

      FILE 'FSTA' ENTERED AT 13:32:50 ON 09 APR 2007
L4        18074 S SOYBEAN OR PEANUT
L5          105 S L4 AND EXTRACTION AND ENZYME

=> s l5 and fraction
         15895 FRACTION
L6           9 L5 AND FRACTION

=> d l6 all 1-9

L6   ANSWER 1 OF 9  FSTA  COPYRIGHT 2007 IFIS on STN
AN   2004:N0397   FSTA
TI   Lipase-mediated acidolysis of fully hydrogenated soybean oil
     with conjugated linoleic acid.
AU   Ortega, J.; Lopez-Hernandez, A.; Garcia, H. S.; Hill, C. G., Jr.
CS   Correspondence (Reprint) address, H. S. Garcia, UNIDA, Inst. Tec. de
     Veracruz, MA de Quevedo 2779, Veracruz, Ver. 91897, Mexico.  E-mail
     hsgarcia(a)itver.edu.mx
SO   Journal of Food Science, (2004), 69 (1) FEP1-FEP6, 44 ref.
     ISSN: 0022-1147
DT   Journal
LA   English
AB   Preparation of structured lipids is attracting attention as a technology
     that uses enzymic interesterification with lipases as a technique for
     modification of oils to improve their nutritional and health benefits.
     Enzyme catalysed acidolysis is an approach to increasing the CLA
     content of fats by interestification.  In this study, interesterification
     (acidolysis) of fully hydrogenated soybean oil (m.p. = 69.9'b0C)
     with CLA was carried out in a batch reactor at 75'b0C.  Lipases from
     Candida antarctica, Rhizomucor miehei, Pseudomonas sp. and Thermomyces
     lanuginosus were used at 5% (weight/weight) of the total substrate load.  The
     lipase from Rhizomucor miehei produced the fastest reaction rates, and the
     greatest extent of incorporation of CLA residues in acylglycerols was
     achieved in 12 h.  Lipases from C. antarctica and T. lanuginosus produced
     slower initial rates, and maximum extents of incorporation of CLA residues
     were achieved in 24 h.  The lipase from Pseudomonas sp. produced the
     slowest initial rate.  The corresponding maximum extent of incorporation was
     reached in 48 h.  DSC analysis of the triacylglycerol (TAG) fractions
     produced by C. antarctica, R. miehei and T. lanuginosus lipases after
     purification by solid phase extraction showed little variation
     in melting point (60.4, 62.8 and 60.1'b0C, respectively).  By contrast,
     the corresponding TAG fraction produced by the Pseudomonas sp.
     lipase melted at 48.4'b0C.  The positional distribution of the TAG
     produced by the lipase from Pseudomonas sp. differed appreciably from
     those produced by the other enzymes.
CC   N (Fats, Oils and Margarine)
CT   CANDIDA; ESTERIFICATION; FUNGI; LINOLEIC ACID; LIPASES; LIPIDS;
     PSEUDOMONAS; RHIZOMUCOR; SOYBEAN OILS; CANDIDA ANTARCTICA; CLA;
     INTERESTERIFICATION; RHIZOMUCOR MIEHEI; STRUCTURED LIPIDS; THERMOMYCES
     LANUGINOSUS

L6   ANSWER 2 OF 9  FSTA  COPYRIGHT 2007 IFIS on STN
AN   2004:J1334   FSTA
TI   Processing of soybean hulls to enhance the distribution and
     extraction of value-added proteins.
AU   Sessa, D. J.
```

CS Plant Polymer Res., Nat. Cent. for Agric. Utilization Res., ARS, USDA, 1815 N. University St., Peoria, IL 61604, USA. E-mail sessadj(a)ncaur.usda.gov
SO Journal of the Science of Food and Agriculture, (2004), 84 (1) 75-82, 25 ref.
ISSN: 0022-5142
DT Journal
LA English
AB Optimum conditions were sought for the aqueous extraction of nitrogenous components from previously prepared air-classified soybean hull fractions, and, in addition, to concentrate and confirm the identity of peroxidase (SBP) and Bowman-Birk type proteinase inhibitor (BBI) in the extracts. 3 different commercial sources of cold-processed soybean hulls were ground in a pin mill at 18 000 rpm and air classified into fractions of sizes <15, 15-18, 19-24, 25-30 and >30 μm. Each fraction was defatted with diethyl ether and extracted with water under previously determined optimum conditions for N extractability. SBP and BBI were identified by SDS-PAGE. Peroxidase activity of soybean hulls were species-specific whereas BBI occurred in similar amounts in all 3 sources. Air classification was effective for distributing SBP into the highest-mass, coarsest fractions. BBI was effectively concentrated from aqueous extracts of ground soybean hulls by cation exchange column chromatography.
CC J (Fruits, Vegetables and Nuts)
CT ENZYME INHIBITORS; FRACTIONATION; HUSKING; PEROXIDASES; SOYBEANS; HULLS; PROTEINASES INHIBITORS

L6 ANSWER 3 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1998(08):G0264 FSTA
TI The bitterness of the enzymatic hydrolysate of soybean protein and the amino acid composition of the UF filtrate.
AU Chang-Hyun Kim; Mi-Ryung Kim; Cherl-Ho Lee
CS Graduate Sch. of Biotech., Korea Univ., 5-1 Anamdong, Sungbukku, Seoul 136-701, Korea
SO Foods and Biotechnology, (1997), 6 (4) 244-249, 25 ref.
ISSN: 1225-5173
DT Journal
LA English
AB The effect of the type of proteolytic enzyme on the bitterness of soybean protein hydrolysates was studied and the bitter peptide fractions were separated by ultrafiltration (UF) or 2-butanol extraction. The bitter peptide fractions were further fractionated by gel permeation chromatography (GPC), and the bitterness intensity of protein hydrolysates and the hydrophobic amino acid contents of the fractions were examined. At the same degree of hydrolysis (DH) of 10%, Alcalase gave the highest bitterness intensity (quinine hydrochloride equivalent: 6.4 x 10.sup.-.sup.5 mole), and the order of decreasing bitterness intensity for the different proteinases was Alcalase > bromelain > papain > Neutrase > trypsin. The mol. weight distribution of the <10 000 Da UF hydrolysate fraction varied with the enzyme used. Secondary-butanol extraction increased the content of lower mol. weight peptide fractions (i.e. ≤3456 Da). There was a strong correlation between the bitterness intensity of the protein hydrolysates and the hydrophobic amino acid content of the UF filtrate of the hydrolysates. [From En summ.]
CC G (Catering, Speciality and Multicomponent Foods)
CT BITTER COMPOUNDS; PEPTIDES; PROTEINASES; SOY PROTEINS; BITTER PEPTIDES; HYDROLYSIS

L6 ANSWER 4 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1996(10):J0116 FSTA
TI Fractionation of angiotensin converting enzyme(ACE) inhibitory peptides from soybean paste.
AU Zae-Ik Shin; Chang-Won Ahn; Hee-Sop Nam; Hyung-Jae Lee; Hyung-Joo Lee;

Tae-Hwa Moon
CS Correspondence (Reprint) address, Hee-Sop Nam, Res. & Dev. Cent., Nong Shim Co. Ltd., 203-1 Dangjeong-dong, Kunpo-si, Kyungki-do 435-030, Korea
SO Korean Journal of Food Science and Technology, (1995), 27 (2) 230-234, 16 ref.
ISSN: 0367-6293
DT Journal
LA Korean
SL English
AB Angiotensin converting enzyme (peptidyl-dipeptidase A, ACE) inhibitory peptides were fractionated from a commercial soybean paste (doenjang). A freeze-dried sample of soybean paste was extracted with cold water; recovery yield of total nitrogen (TN) was 73.3% in 30 min. The cold water extract was filtered through PM-10 membrane for 3 h to remove high mol. weight polypeptides. 80.8 and 99.2% of TN and salt of the ultrafiltrate, respectively, were recovered. IC.sub.5.sub.0 (concentration of inhibitory peptides resulting in 50% ACE inhibition) was determined; the ACE IC.sub.5.sub.0 content of ultrafiltrate was 41.8 μg/ml. Ultrafiltrate was divided into 7 fractions by reverse phase preparative HPLC. The fraction with highest ACE inhibitory activity (IC.sub.5.sub.0 = 6.8 μg/ml) was divided into a further 5 fractions by ion exchange preparative HPLC; all fractions had high ACE inhibitory activity (IC.sub.5.sub.0 = 2.5-8.3 μg/ml). The main amino acid of the fraction with the highest ACE inhibitory activity was histidine. [From En summ.]
CC J (Fruits, Vegetables and Nuts)
CT ANTINUTRITIONAL FACTORS; EXTRACTION; FERMENTED FOODS; NUTRITIONAL VALUES; PROCESSED FOODS; PROCESSING; SOY PRODUCTS; VEGETABLE PRODUCTS; DOENJANG

L6 ANSWER 5 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1995(11):B0115 FSTA
TI Industrial use of soybean lipoxygenase for the production of natural green note flavor compounds.
AU Whitehead, I. M.; Muller, B. L.; Dean, C.
CS Firmenich SA, Geneva, Switzerland
SO Cereal Foods World, (1995), 40 (4) 193-194, 196-197, 4 ref.
ISSN: 0146-6283
DT Journal
LA English
AB A process for production of natural green flavours from polyunsaturated fatty acids using soybean lipoxygenase was investigated. Soybeans were prepared by passing through an industrial blender, and the resulting flour was stirred into an aqueous solution of linoleic or linolenic acid at pH 9.5 under an atmosphere of pure O.sub.2 to produce the appropriate hydroperoxide. The resulting 13-hydroperoxides were used to screen various plant materials for hydroperoxide lyase activity, using accumulation of hexanal, cis-3-hexenal and trans-2-hexenal as indicators. Yields from 13-hydroperoxy-linolenic acid (13-HPOT) cleavage were lower than from 13-hydroperoxy-linoleic acid (13-HPOD), and it is suggested that this may be a result of enzyme specificity. Reduction of the C-6 aldehydes to the corresponding alcohols was investigated in situ using actively fermenting bakers yeast to provide alcohol dehydrogenase. Complete reduction was obtained within 1 h by direct addition of fresh yeast to the reaction mixture at 25°C. By varying the amount and addition time of the yeast, it was possible to produce predominantly one or other of the C-6 alcohols. Simultaneous mixing of 13-HPOT, plant material and yeast gave a C-6 fraction composed of 85% cis-3-hexen-1-ol; addition of the yeast 1 h after the start of the cleavage reaction gave a C-6 fraction that contained principally trans-2-hexen-1-ol. Replacing 13-HPOT with 13-HPOD gave pure hexan-1-ol. Products were isolated using steam distillation, followed by solvent extraction. As all starting materials are of biological origin and non-toxic, it is suggested that reaction residues can be used as animal

feeds or composted. It is concluded that this process may solve supply problems for these flavour ingredients for both current and future market needs.
CC B (Biotechnology)
CT ACIDS; BIOCONVERSIONS; BIOTECHNOLOGY; ENZYMES; FATTY ACIDS; FLAVOUR COMPOUNDS; LIPIDS; FATTY ACIDS POLYUNSATURATED

L6 ANSWER 6 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1992(03):J0109 FSTA
TI Aqueous ethanol extraction of soybean trypsin inhibitors and characterization of a calcium-sensitive fraction.
AU Liu, K.; Markakis, P.
CS Dep. of Food Sci. & Tech., Georgia Agric. Exp. Sta., Univ. of Georgia, Griffin, GA 30223, USA
SO Journal of Food Biochemistry, (1991), 15 (3) 159-168, 13 ref.
ISSN: 0145-8884
DT Journal
LA English
AB Trypsin inhibition by an 85% aqueous ethanol extract of soybeans was shown to have many similarities to that exhibited by long chain fatty acids and their acyl CoA esters, in terms of concentration dependence, time dependence and susceptibility to Ca.sup.+.sup.+ suppression. The heat-stable and hexane-extractable inhibitor in the extract was thus referred to as the Ca.sup.+.sup.+-sensitive fraction, in contrast to classic proteinaceous inhibitors. Tempeh fermentation increased the antitryptic activity of the 85% ethanol extract. Extraction of both classic and Ca.sup.+.sup.+-sensitive inhibitors from soybeans by aqueous ethanol was found to be concentration dependent. Aqueous solvents with <20% ethanol removed classic inhibitors as effectively as water, but extracted no Ca.sup.+.sup.+-sensitive one. Above 20% ethanol in the solvent, the classic inhibitors in the extract decreased until reaching a zero value at 70% ethanol concentration, while the Ca.sup.+.sup.+-sensitive fraction increased to a maximum at 85%.
CC J (Fruits, Vegetables and Nuts)
CT ENZYME INHIBITORS; ENZYMES; ETHANOL; EXTRACTION; LEGUMES; OILSEEDS; PROTEINASES; SOYBEANS; TRYPSIN; TRYPSIN INHIBITORS

L6 ANSWER 7 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1987(03):P0100 FSTA
TI Profiles of proteinases in Gouda-type cheese.
AU Igoshi, K.; Kaminogawa, S.; Yamauchi, K.
CS Dep. Agric. Chem., Univ. Tokyo, Bunkyo-ku, Tokyo 113, Japan
SO Journal of Dairy Science, (1986), 69 (8) 2018-2026, 12 ref.
DT Journal
LA English
AB Proteinase-containing fractions were extracted from 5-month-old Gouda cheese at pH 3, 4 and 6 and proteinases in each fraction were separated by chromatography on CM-Sephadex or DEAE-cellulose; they were termed F.sub.3I and F.sub.3II, F.sub.4I, F.sub.4II and F.sub.4III and F.sub.6 in accordance with extraction pH. F.sub.3I was 100% inhibited by pepstatin; it degraded α.sub.s.sub.1-casein and β-casein into products with the same mobilities as α.sub.s.sub.1-CN (f 24-199) and β-CN (f 1-189) peptides. F.sub.3II was 70% inhibited by diisopropylfluorophosphate (DPF) and soybean trypsin inhibitor, and its action on casein produced fragments with mobilities equal to those of γ-caseins, i.e. β-CN (f 29-209), β-CN (f 106-209) and β-CN (f 109-209). Although F.sub.4 was 100% inhibited by pepstatin, patterns of casein degradation were different from those by F.sub.3I. F.sub.6 was strongly inhibited by DPF and EDTA. Based on optimum pH and inhibitory patterns, F.sub.4II and F.sub.3I are considered to be the same enzyme, as are F.sub.4III and F.sub.3II. F.sub.3I/F.sub.4II and F.sub.4I were acid proteinases, and F.sub.3II/F.sub.4III and F.sub.6 were serine proteinases.
CC P (Milk and Dairy Products)

CT CHEESE; PROTEINASES; CHEESES SPECIFIC; GOUDA TYPE; GOUDA TYPE CHEESE; PROFILES; PROFILES # GOUDA TYPE

L6 ANSWER 8 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1978(07):G0418 FSTA
TI [Study of trypsin activity and physico-chemical properties of several soybean protein fractions.]
AU Bau, H. M.; Poullain, B.; Sere, Y.; Debry, G.
CS Lab. de Biophysique, Univ. de Nancy I, 54037 Nancy Cedex, France
SO Canadian Institute of Food Science and Technology Journal, (1978), 11 (1) 7-11, 16 ref.
DT Journal
LA French
SL English
AB 4 soybean protein fractions, (i) cold precipitated at 2-4°C for 72 h, (ii) acid precipitated at pH 4.5 (isoelectric point), (iii) salt precipitated by CaCl.sub.2, 0.03 M in final concentration, and (iv) soy whey fraction, precipitated by acetone at -20°C, were extracted from defatted soybean flakes. Trypsin inhibitor activity, protein and non-protein N content, effect of mercaptoethanol and urea on solubility and ultra-centrifugal patterns and yield were investigated. Results show that (i) contains the highest protein content (90.6%) and (iv) the highest content of ash (8.3%), non-protein N (29.3%) and trypsin inhibitor (382 units). Extraction yield for (i)-(iv) was resp. 21.7, 33.4, 36.0 and 6.8%, and content of trypsin inhibitor after gentle thermal treatment was 8, 14.1, 9 and 382 units resp. Addition of 1.5 M urea + 0.01 M mercaptoethanol increased solubility and modified the coefficient of sedimentation.
CC G (Catering, Speciality and Multicomponent Foods)
CT ENZYME INHIBITORS; INHIBITION; PROTEINASES; SOY PRODUCTS; SOY PROTEINS; WHEY; PHYSICO-CHEMICAL; SOY PROTEIN FRACTIONS; SOY WHEY FRACTIONS; TRYPSIN; TRYPSIN INHIBITORS

L6 ANSWER 9 OF 9 FSTA COPYRIGHT 2007 IFIS on STN
AN 1971(05):G0166 FSTA
TI Enzymatic modification of proteins in foodstuffs. I. Enzymatic proteolysis and plastein synthesis. Application for preparing bland protein-like substances.
AU Fujimaki, M.; Yamashita, M.; Arai, S.; Kato, H.
CS Dept. of Agric. Chem., Univ., Tokyo, Japan
SO Agricultural and Biological Chemistry, (1970), 34 (9) 1325-32, 33 ref.
DT Journal
LA English
AB A new method was studied for preparing protein-like food products free from unfavourable odour, taste and colour by peptic hydrolysis and susequent plastein synthesis. Protein concentrates from soybean, cod, Chlorella, wheat, milk, bakers' yeast and hydrocarbon assimilating yeasts were partially hydrolysed with pepsin and odorants. Fats and colours were removed by ether extraction: about twice as much odorant (n-hexanol and n-hexanal from soybean, trimethylamine and methyl ethyl ketone from cod) and 4-7 times as much crude fat and colour was removed as from a control. Resulting proteolysates were debittered by the plastein synthetic reaction. Of 17 enzyme preparations tested for plastein productivity with soy protein, highest yields were obtained with a αchymotrypsin (95% of a 10% trichloro-acetic acid insoluble fraction) and 2 microbial protease preparations, Bioprase (85%) and Prozyme (77%). Plastein productivity and debittering effects were almost correlative, although no statistical evidence is presented. Plastein % productivity of α-chymotrypsin with peptic hydrolysates was 95.0 with soybean, 69.9 with codfish, 72.8 with Chlorella, 92.5 with gluten, 48.0 with casein, 73.5 with bakers' yeast and 96.2 with hydrocarbon assimilating yeast protein. [See also following abstract]
CC G (Catering, Speciality and Multicomponent Foods)

CT ALGAE; AROMA; CASEIN; COD; COLOUR; ECONOMICS; FATS; FISH; GLUTEN; MILK; PROTEIN CONCENTRATES; PROTEINASES; PROTEINS; PROTEINS MILK; SOYBEANS; WHEAT; YEASTS; CHLORELLA; CHYMOTRYPSIN; FISH PROTEIN CONCENTRATE; HYDROLYSIS; MILK (PROTEINS); MILK PROTEINS; ODORANTS; PARTIAL; PEPSIN; PEPSINS; PLASTEIN; PRODUCTION; PROTEASES; PROTEIN; PROTEIN # PROTEIN CONCENTRATE; PROTEINS (UNCONVENTIONAL); SMELL; SOYBEAN; YEAST; YEAST PROTEINS; YIELD # Na -CHYMOTRYPSIN; YIELD # MICROBIAL

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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	28.04	150.22

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-11.70

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